

ANNEX FIVE
BETWEEN
THE NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
GODDARD SPACE FLIGHT CENTER
AND UNITED LAUNCH ALLIANCE, LLC
UNDER SPACE ACT UMBRELLA AGREEMENT
NO. 34019, (ANNEX NUMBER 36118).

ARTICLE 1. PURPOSE

This Annex shall be for the purpose of providing NASA Space Communication and Navigation (SCaN) services to United Launch Alliance launch vehicle missions which are scheduled for 2022.

The legal authority for this Annex, consistent with the Umbrella Agreement, is in accordance with the Space Act (51 U.S.C. § 20113(e)).

ARTICLE 2. RESPONSIBILITIES

A. NASA GSFC will use reasonable efforts to:

1. Negotiate support commitments with United Launch Alliance for all NASA support installations to be involved in providing Space Relay (SR) return services for the mission launch vehicles.
2. Order and fund CP NASCOM Services required to deliver SCaN Services to United Launch Alliance (ULA) Operational Locations.
3. Provide Flight Dynamic Facility (FDF) services which are an integral part of SCaN services, including providing acquisition data for Tracking Data Relay Satellite (TDRS) to point to the launch vehicle in real-time.
4. Provide United Launch Alliance with the SR and ancillary services as requested and agreed by NASA through signed lower level agreements, including:
 - a. Review United Launch Alliance's mission documentation, mission specifications, radio frequency plans, and Vehicle Information Memoranda;
 - b. Attend meetings and reviews to plan for support, as requested and paid for by United Launch Alliance;
 - c. Conduct network simulations and mission readiness verification activities to assure successful delivery of data to United Launch Alliance;
 - d. Maintain, through the various NASA field installations, any necessary support interfaces with United Launch Alliance;
 - e. Submit to United Launch Alliance a mission close out letter for each mission.
 - f. If additional funding is required NASA will send an invoice for the additional funding required; this includes all subsequent flights;
 - g. Document the interface between United Launch Alliance and NASA for the transmission of United Launch Alliance telemetry via SCaN; and
 - h. Provide return services during the launch vehicle mission.

- i. Conduct RF Compatibility Testing and end-to-end testing with the United Launch Alliance Telecom system as provided by the customer.
- j. NASA will be available to support up to 3 consecutive launch days in the event of launch slips, no greater than 12 hours per day. After one down day, NASA will be available to resume support for 3 consecutive days provided there are no other NASA commitments.etc)

B. Partner will use reasonable efforts to:

1. Review and approve NASA mission documentation, identifying the SCA/N and ancillary services required and the requested schedules. The partner will provide both long-range launch projections for any activities anticipated within the scope of this Agreement, including, to the extent possible, the anticipated support requirements of the mission.
2. Provide NASA with a written, detailed requirements document
3. Provide NASA with the launch vehicle transmitter hardware and associated operations support and equipment to conduct a SR compatibility test
4. Provide NASA with antenna/transmitter information for Radio Frequency Interface Control Document updates, as changes are identified.
5. Reimburse NASA for all services NASA is providing pursuant to this agreement;
6. Assure the compatibility of the launch vehicle radio frequency interface with SCA/N via an RF Compatibility and end-to-end test conducted by NASA with the United Launch Alliance Telecom system; and
7. Prepare and submit NASA required documentation in accordance with NASA policy and procedures
8. Prepare and deliver to NASA terms specific to each individual launch mission which will be specified in Individual Support Annexes negotiated in advance of each mission

ARTICLE 3. SCHEDULE AND MILESTONES

The planned major milestones for the activities for this Annex defined in the "Responsibilities" Article are as follows:

1. The Partner shall provide funding for launch by Launch-120 days in the amount of \$303,648.00.
2. The Partner shall provide detailed requirements by L-90 days for launch.
3. The Partner shall provide transmitter for compatibility testing L-9 months if the transmitter changed from previous tested transmitter. Otherwise the Partner shall document on the requirements in a letter with the model number used.

ARTICLE 4. FINANCIAL OBLIGATIONS

A. Partner agrees to reimburse NASA an estimated cost of \$303,648 for NASA to carry out its responsibilities under this Annex. Funding needs to be received 4 months before launch work begins. Above is an estimate, customer is responsible for full cost of work. Each payment shall be marked with [Goddard Space Flight Center and Annex number 36118]. B. NASA will not provide services or incur costs beyond the current funding. Although NASA has made a good faith effort to accurately estimate its costs, it is understood that NASA provides no assurance that the proposed effort under this Annex will be accomplished for the estimated amount. Should the effort cost more than the estimate, Partner will be advised by NASA as soon as possible. Partner shall pay all costs incurred and have the option of canceling the remaining effort or providing additional funding in order to continue the proposed effort under the revised estimate. Should this Annex be terminated, or the effort completed at a cost less than the agreed-to estimated cost, NASA shall account for any unspent funds within one year after completion of all effort under this Annex, and promptly thereafter, at Partner's option return any unspent funds to Partner or apply any such unspent funds to other activities under the Umbrella Agreement.

ARTICLE 5. INTELLECTUAL PROPERTY RIGHTS - DATA RIGHTS

Data produced under this Annex which is subject to paragraph C. of the Intellectual Property Rights - Data Rights Article of the Umbrella Agreement will be protected for the period of 2 years.

ARTICLE 6. TERM OF ANNEX

This Annex becomes effective upon the date of the last signature below ("Effective Date") and shall remain in effect until the completion of all obligations of both Parties hereto, or 5 years from the Effective Date, whichever comes first, unless such term exceeds the duration of the Umbrella Agreement. The term of this Annex shall not exceed the term of the Umbrella Agreement. The Annex automatically expires upon the expiration of the Umbrella Agreement.

ARTICLE 7. RIGHT TO TERMINATE

Either Party may unilaterally terminate this Annex by providing thirty (30) calendar days written notice to the other Party.

ARTICLE 8. POINTS OF CONTACT

The following personnel are designated as the Points of Contact between the Parties in the performance of this Annex.

Management Points of Contact:

NASA Goddard Space Flight Center
Rosa Avalos-Warren
Launch Vehicles and Robotics
Network Director
Near Space Network (NSN)
8800 Greenbelt Road
Greenbelt, Maryland 20771
rosa.v.avalos-warren@nasa.gov

United Launch Alliance, LLC,
Jack W. Smith
ULA Program Contracts
9501 E. Panorama Circle
Centennial, CO 80112-3401
Phone: 321 730-0504
Email: jack.w.smith@ulalaunch.com

Technical Points of Contact:

Matthew Vincent
Mission Manager
8800 Greenbelt Road
Greenbelt, Maryland 20771
matthew.vincent@nasa.gov

Mitchell Drew
Flight Operations
9501 E. Panorama Circle Centennial, CO
80112-3401
mitchell.e.drew@ulalaunch.com

ARTICLE 9. MODIFICATIONS

Any modification to this Annex shall be executed, in writing, and signed by an authorized representative of NASA and the Partner. Modification of an Annex does not modify the terms of the Umbrella Agreement.

ARTICLE 10. SIGNATORY AUTHORITY

The signatories to this Annex covenant and warrant that they have authority to execute this Annex. By signing below, the undersigned agrees to the above terms and conditions.

NATIONAL AERONAUTICS AND
SPACE ADMINISTRATION
HEADQUARTERS

UNITED LAUNCH ALLIANCE, LLC

BY: _____

Badri Younes
Deputy Associate Administrator Space
Communications and Navigation
NASA Headquarters
300 E. Street SW
Washington, DC 20546



BY: JACK W. SMITH, CONTRACTS

^{FOR} United Launch Alliance,
Todd R. Pankuch
Launch Operation Lead, Contracts United
Launch Alliance, LLC 9501 E. Panorama
Circle Centennial, CO 80112-3401

DATE: _____

DATE: 3 JUNE 2022